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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appellant: Thomas A. Todd et. al.  
Serial No.: 10/665,955  
Technology Center: 1700  
Art Unit: 1714  
Filed: September 17, 2003  
Title: "Fuel Additive Composition and Method for Making Same"  
Examiner: Cephia D. Toomer  
Docket No.: P03927

**APPEAL BRIEF**

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**I. INTRODUCTION**

This Appeal is from a Final Office Action mailed on September 24, 2007, rejecting Claims 1-60 of the current application. Applicant commenced this Appeal by Notice of Appeal and submission of this Appeal Brief, both filed December 24, 2007.

**II. REAL PARTY IN INTEREST**

Formula Plus, Inc.  
7721 E. Gray Rd.  
Suite 103  
Scottsdale, Arizona 85260

**III. RELATED APPEALS AND INTERFERENCES**

The Appellant, the undersigned, and the assignee are not aware of any related appeals, interferences, or judicial proceedings (past or present), which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

**IV. STATUS OF CLAIMS**

Claims 1-70 are pending in the application, wherein Claims 61-70 have been withdrawn from consideration, and Claims 1-60 are finally rejected and subject to the present appeal. The claims on appeal are set forth in the attached Appendix. Claims 1 and 55 are independent claims. Claims 2-54 depend directly or indirectly from Claim 1, and Claims 56-60 depend directly or indirectly from Claim 55.

**V. STATUS OF AMENDMENTS**

No amendment was submitted after the Final Rejection.

## **VI. SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention provides a comprehensive-single-addition transportation fuel additive that can be tailored to the needs of local fuels (both gasoline and diesel) to compensate for the low quality of transportation fuels in underdeveloped countries. As recited in independent Claims 1 and 55, the present invention involves providing a comprehensive-single-addition transportation fuel additive that is comprised of:

- “at least one amount of at least one additive component sufficient to effectively enhance biocidal action” most clearly described in the paragraphs starting on page 23, line 14 of the specification.
- “at least one amount of at least one additive component sufficient to effectively enhance combustion boosting action” most clearly described in the paragraphs starting on page 18, line 7 of the specification.
- “at least one amount of at least one additive component sufficient to effectively enhance corrosion inhibiting action” most clearly described in the paragraphs starting on page 19, line 26 of the specification.
- “at least one amount of at least one additive component sufficient to effectively enhance water managing action” most clearly described in the paragraphs starting on page 20, line 16 of the specification.
- “at least one amount of at least one additive component sufficient to effectively enhance detergent action” most clearly described in the paragraphs starting on page 21, line 5 of the specification.
- “at least one amount of at least one additive component sufficient to effectively enhance solvent action” most clearly described in the paragraphs starting on page 22, line 5 of the specification.

- “at least one amount of at least one additive component sufficient to effectively enhance fuel stabilizing action” most clearly described in the paragraphs starting on page 22, line 26 of the specification.
- “at least one amount of at least one additive component sufficient to effectively enhance fuel lubricating action” most clearly described in the paragraphs starting on page 24, line 6 of the specification.

The following charts of formulations of the comprehensive fuel additive formula are provided as enabling examples.<sup>1</sup>

	Volume %	Chemical
Octane Booster	3.0	cumene
Combustion Catalyst	2.0	Ferrocene
Corrosion Inhibitor	2.0	DCI 6A
Water remover	3.0	2-butoxyethanol
Detergent	20.0	DMA 558™
	6.0	2,4 Pentanedione
Solvents	50.0	Xylene
	2.0	n-propylbenzene
Fuel Stabilizer	2.0	AO 22™
Biocide	4.0	1,2,4-trimethylbenzene
Fuel Lubricant	2.0	DCI 6A
Pour Point Depressant	6.0	methanol
	102.0	TOTAL

For Gasoline, with PPD

<sup>1</sup> Total percentages over 100% are caused by chemicals being used for two purposes at the same time. For example, in the first example chart, 2.0 percent DCI 6A™ is counted once as a corrosion inhibitor and again separately as a fuel lubricant, but only one 2.0 percent dose of DCI6A™ is actually added to the comprehensive fuel additive formula.

	Volume %	Chemical
Octane Booster	3.0	cumene
Combustion Modifier	2.0	Ferrocene
Corrosion Inhibitor	2.0	DCI 6A
Water remover	3.0	2-butoxyethanol
Detergent	20.0	DMA 558™
	6.0	2,4 Pentanedione
Solvents	56.0	Xylene
	2.0	n-propylbenzene
Fuel Stabilizer	2.0	AO 22™
Biocide	4.0	1,2,4-trimethylbenzene
Fuel Lubricant	2.0	DCI 6A
	102.0	TOTAL

For Gasoline, without PPD

	Volume %	Chemical
Cetaine Booster	30.0	2-ethylhexyl nitrate
	2.0	2-ethylhexyl alcohol
Combustion Catalyst	2.0	Ferrocene
Corrosion Inhibitor	0.5	DCI 4A™
Water remover	5.0	DMA 451™
Detergent	5.0	DMA 451™
	10.0	2,4 Pentanedione
Solvents	20.0	AROL 50™
HA Naptha	2.5	HA Naptha
Fuel Stabilizer	5.0	DMA 558™
Biocide	1.0	T9312
Fuel Lubricant	2.0	OLI 5015™
Pour Point Depressant	20.0	Vinyl Acetate polymers
	105.0	Total

For Diesel, with PPD

	Volume %	Chemical
Cetaine Booster	30.0	2-ethylhexyl nitrate
	2.0	2-ethylhexyl alcohol
Combustion Modifier	2.0	Ferrocene
Corrosion Inhibitor	0.5	DCI-4A™
Water remover	5.0	DMA 451™
Detergent	5.0	DMA 451™
	10.0	2,4 Pentanedione
Solvents	40.0	AROL 50™
HA Naptha	2.5	HA Naptha
Fuel Stabilizer	5.0	DMA 558™
Biocide	1.0	T9312
Fuel Lubricant	2.0	OLI 5015™

For Diesel, with PPD

## **VII. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

The following claim rejections were asserted in the Final Rejection:

- (A) Claims 1, 7, 19 and 55 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- (B) Claims 15, 31, 36-38, 40-43, and 46-53 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- (C) Claims 1-14, 19-30, 35, 37-42, 44, 45, 47-52, and 54-60 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,279,626 to Cunningham et al. (hereinafter "Cunningham").

The issues before the Board are as follows:

**35 U.S.C. §112**

ISSUE 1: Does the usage of the term “comprehensive fuel additive” in Claims 1, 7, 19 and 55 render these claims indefinite?

ISSUE 2: Does the usage of trademarked fuel additives in Claims 15, 31, 36-38, 40-43, and 46-53 render these claims indefinite?

**35 U.S.C. §103**

ISSUE 3: Under 35 USC §103(a), does Cunningham’s “Enhanced Fuel Additive Concentrate” render obvious the subject matter of Claims 1-14, 19-30, 35, 37-42, 44, 45, 47-52, and 54-60?

**VIII. ARGUMENT**

**Applicant’s Claims Are In Compliance With 35 U.S.C. §112, Second Paragraph**

**ISSUE 1:** Does the usage of the term “comprehensive fuel additive” in Claims 1, 7, 19 and 55 render these claims indefinite?

In rejecting Claims 1, 7, 19, and 55, the Examiner states that the term “comprehensive fuel additive” is not understood. However, it is respectfully submitted that Appellant clearly uses and defines the phrase “comprehensive fuel additive”. For example, Appellant’s specification, at page 17, lines 19-23, states:

The comprehensive fuel additives of the present invention have a novel capability of substantially correcting, with a single user-friendly addition of such additives, all of the detrimental aspects of low-quality transportation fuels. The comprehensive fuel additive formula is preferably tailored and adjusted to meet local needs. Different, but closely related, comprehensive fuel additive formulas are used for motor fuels and diesel fuels.

The specification goes on in detail to describe each of the components that make up the comprehensive fuel additives both for gasoline-powered motors and those that use diesel fuel. It is respectfully submitted that the term "comprehensive fuel additive" is precise, definite and meaningful on its face and in the particular usages.

The Examiner further states "any recitation [in the specification] regarding a comprehensive fuel additive refers to the combination of all of the claimed components and not to an individual component". Appellant agrees that the term "comprehensive fuel additive" refers to the combination of components and not to an individual component. However, there is no requirement that a combination of components may not be recited in a claim limitation.

It is respectfully submitted that the term "comprehensive fuel additive" is used properly to limit the scope of the claims such that a comprehensive fuel additive may be provided to transportation fuels.

The claim scope is not indefinite.

Reversal of the rejection of Claims 1, 7, 19, and 55 under 35 USC §112, second paragraph, is respectfully requested.<sup>2</sup>

**ISSUE 2:** Does the usage of trademarked fuel additives in Claims 15, 31, 36-38, 40-43, and 46-53 render these claims indefinite?

In rejecting these claims, the Examiner applies a strict rule in which a trademark / name may not be used in a claim as a limitation to identify or describe a particular material or product.

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<sup>2</sup> Should the Board find for the examiner on this point, it is respectfully requested that the case be remanded for amendment to clarify the claimed subject matter. Moreover, it is respectfully submitted that this rejection is more properly a claim objection.



Appellant does not dispute that certain trademarked fuel additives are recited in the claims.<sup>3</sup> However, Appellant has provided evidence, in the form of a declaration from a recognized expert in the field, to the fact that, in the automotive industry, fuel additives do not change formulation without also always changing the formulation name.<sup>4</sup> Military, government, and corporate fuel additive specifications require specific, exact, unchanging formulations, which are cited by the specific, exact, and unchanging name of the formulation. Appellant is forced to use trademarks as chemical descriptors because these formulations are typically trade secrets that cannot be described in any other way. In this patent application, the trademarks/ names do clearly identify the goods. The claim scope is not uncertain because the names do properly identify a specific material. Therefore, it is respectfully submitted that the use of trademarks / names in the claims of the present patent application does not run afoul with 35 USC 112, second paragraph.

In rejecting these claims for indefiniteness, the Examiner relies on the case of *Ex parte Simpson*.<sup>5</sup> However, *Ex parte Simpson* is distinguishable from the instant case and the reasoning and holding in that case does not apply here. In *Ex parte Simpson*, the appellant's claims recited a trademarked material known as "Hypalon". Even though Hypalon was a well-known material, the Board found that the claim scope was "uncertain as to the regards of the material which forms the 'Hypalon' membrane".<sup>6</sup> In particular, the Board concluded that there was "nothing in the record to indicate that materials marketed under the trademark 'Hypalon' contain only chlorosulphonated

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<sup>3</sup> The following trademarks are used in Appellant's claims: AO 22™, ALKEN EVEN FLO 910™, AROL 50™, BIOBOR JFT™, DCI™, DCI 4A™, DCI 6A™, DCI 11™, DCI 28™, DCI 30™, DDA-4500™, DMA 451™, DMA 558™, DMA 559™, DMA 560™, DMA 561™, DMA 562™, DMA 563™, DMA 564™, HISOL 100™, HITEC 580™, HITEC 3023™, HITEC 6423™, HITEC 6471™, KATHON 886™, OLI 5015™, OLI-5000™, OLI-9000™, ONDEO-NALCO 5403™, ONDEO-NALCO 303MC™, T9312™, and T9360™.

<sup>4</sup> See attached Declaration of Edward R. Eaton, "Evidence Appendix", pp. A41-A44, *infra*.

<sup>5</sup> 218 USPQ 1020 (1982).

<sup>6</sup> *Id.* at 1021.

polythene.”<sup>7</sup> Furthermore, the Board noted that “different manufacturers produce various materials which contain chlorosulphonated polythene either alone or in combination with other materials such as rubber and/or additives.”<sup>8</sup>

The Board explained the reasoning for affirming the examiner’s rejection as follows:

The underlying question here is how much, if any, chlorosulphonated polythene must be present in a material that is employed in the claimed combination before infringement occurs. A patent applicant has an obligation imposed by 35 U.S.C 112, second paragraph, to employ claim terminology which is definitive of what the public is not free to use, and use of a trademark in the manner employed by appellant has resulted in claims which fail to meet this obligation in our opinion.<sup>9</sup>

In contrast, Appellant has recited only trademarked fuel additives whose formulations do not vary. Any change to the fuel additive formulation requires a change to the trademark / name. Thus, the public is put on notice as to exactly which materials may not be freely used.

The Examiner has raised an additional argument against using a trademark /name in a claim. The Examiner states that “a trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name.” However, it is respectfully submitted that in the present case, the trademarks/ names do clearly identify the specific materials. Therefore, it is respectfully submitted that the use of trademarks / names in the claims of the present patent application is proper.

Reversal of the rejection of Claims 15, 31, 36-38, 40-43, and 46-53 under 35 USC 112, second paragraph, is respectfully requested.

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<sup>7</sup> *Id.* at 1022.

<sup>8</sup> *Id.* at 1022.

### **Applicant's Claims are Non-Obvious**

**ISSUE 3:** Under 35 USC §103(a), does Cunningham's "Enhanced Fuel Additive Concentrate" render obvious the subject matter of Claims 1-14, 19-30, 35, 37-42, 44, 45, 47-52, and 54-60?

Appellant provides a comprehensive-single-addition transportation fuel additive that can be tailored to the needs of local fuels (both gasoline and diesel) to compensate for the low quality of transportation fuels in underdeveloped countries. Appellant has been the first to both recognize the problems with transportation fuel in underdeveloped countries, and in response to such problems, has proposed and developed a comprehensive fuel additive designed to counteract such problems. It is well settled that when a longstanding problem is recognized, and the solution to that problem is new and creative, even a straightforward march to the solution is patentable.

In contrast, the Cunningham reference discloses a method for enhancing a fuel additive package so as to improve the shelf-life of the package. It is apparently the Examiner's position that since fuel additive packs with a stable shelf-life exist (the Cunningham reference), any novel combination of components used as a fuel additive to solve a completely different problem is automatically obvious. The Examiner essentially argues that any arbitrary combination of the components discussed in the Cunningham reference would be obvious -- even if not taught, suggested or enabled.<sup>10</sup>

Additionally, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made "to optimize the proportions of the additive components

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<sup>9</sup> *Id.* at 1022.

<sup>10</sup> The Examiner states, "Cunningham differs from the claims in that he does not specifically teach a composition wherein all the components are present. However, no unobvious [sic] is seen in this difference because Cunningham teaches all of the claimed components and he teaches that they may be combined to produce an additive package".

through routine experimentation for the best results”, relying on the case of *In re Boesch*.<sup>11</sup> Applicant respectfully submits that *In re Boesch* is not applicable to the present case. *In re Boesch* dealt with the question of whether or not optimizing a “result effective variable” in a known process is ordinarily within the skill of the art. However, a particular parameter must first be recognized as a result-effective variable, i.e., a variable that achieves a recognized result, before the determination of the optimum or workable ranges of the variable might be characterized as routine experimentation.<sup>12</sup> The present case does not involve a result effective variable since there is no recognition in the prior art of any fuel additive being used in a comprehensive-single-addition transportation fuel additive. The Cunningham reference merely provides a recipe for enhancing the shelf-life of one particular type of detergent additive.

Finally, the Examiner refers to the Cunningham reference, at col. 5, lines 64-68, for the notion that “[o]ther components may be used in the additive package including oxidation inhibitors, corrosion inhibitors, emission control additives (combustion modifying additive), lubricity additives, biocides and octane or cetane improves (combustion boosting additives)”. However, the cited portion of the text fails to reveal any suggested quantities or formulas. Thus, this prior art reference does not teach, suggest, or enable useful, finished formulas for treating the entire spectrum of fuel quality problems, as Appellant does.

Reversal of the rejection of Claims 1-14, 19-30, 35, 37-42, 45, 47-52, and 54-60 under 35 USC 103(a) is respectfully requested.

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<sup>11</sup> 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

<sup>12</sup> MPEP 2144.05(II)(B). See, also, *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

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IX. CONCLUSION

The Appellants have demonstrated that the present invention as claimed is clearly presented in proper form and distinguishable over the prior art of record. Therefore, the Applicants respectfully request the Board of Patent Appeals and Interferences to reverse the final rejection of the Examiner and instruct the Examiner to issue a notice of allowance of all claims.

A fee of \$255.00 will be paid electronically by EFS to cover the filing fee for the brief. If there are any further fees necessitated by the foregoing communication not covered by the enclosed check, please charge such fees to our Deposit Account No. 50-1887, or if the amount submitted herewith is greater than the amount required, please credit any overpayment to our Deposit Account No. 50-1887.

Respectfully submitted,

Dated: December 24, 2007



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**X. CLAIMS APPENDIX**

- 1) A fuel additive system, for comprehensive-single-addition improvement of low-quality transportation fuels, comprising:
  - a) at least one amount of at least one additive component sufficient to effectively enhance biocidal action;
  - b) at least one amount of at least one additive component sufficient to effectively enhance combustion boosting action;
  - c) at least one amount of at least one additive component sufficient to effectively enhance corrosion inhibiting action;
  - d) at least one amount of at least one additive component sufficient to effectively enhance water managing action;
  - e) at least one amount of at least one additive component sufficient to effectively enhance detergent action;
  - f) at least one amount of at least one additive component sufficient to effectively enhance solvent action;
  - g) at least one amount of at least one additive component sufficient to effectively enhance fuel stabilizing action; and
  - h) at least one amount of at least one additive component sufficient to effectively enhance fuel lubricating action;
  - i) wherein at least one comprehensive fuel additive may be provided for adding to transportation fuels.
- 2) The fuel additive system according to Claim 1 further comprising at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action.

- 3) The fuel additive system according to Claim 1 further comprising at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action.
- 4) The fuel additive system according to Claim 1 further comprising:
  - a) at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action; and
  - b) at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action.
- 5) The fuel additive system according to Claim 1 further comprising the low-quality transportation fuels.
- 6) The fuel additive system according to Claim 5 wherein said at least one amounts of said at least one additive components totally comprise a volume ratio with respect to transportation fuels of about 1:1000.
- 7) The fuel additive system according to Claim 1, for comprehensive-single-addition improvement of low-quality motor fuels, wherein:
  - a) said at least one amount of said at least one additive component sufficient to effectively enhance biocidal action comprises from about 0.2 to about 7 volume percent;
  - b) said at least one amount of said at least one additive component sufficient to effectively enhance combustion boosting action comprises from about 1 to about 5 volume percent;
  - c) said at least one amount of said at least one additive component sufficient to effectively enhance corrosion inhibiting action comprises from about 0.2 to about 5 volume percent;

- d) said at least one amount of said at least one additive component sufficient to effectively enhance water managing action comprises from about 2 to about 8 volume percent;
  - e) said at least one amount of said at least one additive component sufficient to effectively enhance detergent action comprises from about 20 to about 45 volume percent;
  - f) said at least one amount of said at least one additive component sufficient to effectively enhance solvent action comprises from about 46 to about 80 volume percent;
  - g) said at least one amount of said at least one additive component sufficient to effectively enhance fuel stabilizing action comprises from about 0.2 to about 5 volume percent; and
  - h) said at least one amount of said at least one additive component sufficient to effectively enhance fuel lubricating action comprises from about 0.5 to about 5 volume percent;
  - i) wherein at least one comprehensive fuel additive may be provided for adding to motor fuels.
- 8) The fuel additive system according to Claim 7 further comprising at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising from about 0.0002 to about 9 volume percent;
  - 9) The fuel additive system according to Claim 7 further comprising at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising from about 5 to about 10 volume percent.
  - 10) The fuel additive system according to Claim 7 further comprising:



- a) at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising from about 0.0002 to about 9 volume percent; and
- b) at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising from about from 5 to about 10 volume percent.

11) The fuel additive system according to Claim 7 wherein:

- a) said at least one amount of said at least one additive component sufficient to effectively enhance biocidal action comprises from about 0.6 to about 5 volume percent;
- b) said at least one amount of said at least one additive component sufficient to effectively enhance combustion boosting action comprises from about 2 to about 4 volume percent;
- c) said at least one amount of said at least one additive component sufficient to effectively enhance corrosion inhibiting action comprises from about 1 to about 2.5 volume percent;
- d) said at least one amount of said at least one additive component sufficient to effectively enhance water managing action comprises from about 2 to about 6 volume percent;
- e) said at least one amount of said at least one additive component sufficient to effectively enhance detergent action comprises from about 26 to about 35 volume percent;

- f) said at least one amount of said at least one additive component sufficient to effectively enhance solvent action comprises from about 52 to about 59 volume percent;
  - g) said at least one amount of said at least one additive component sufficient to effectively enhance fuel stabilizing action comprises from about 1 to about 2.5 volume percent; and
  - h) said at least one amount of said at least one additive component sufficient to effectively enhance fuel lubricating action comprises from about 1.5 to about 2.5 volume percent.
- 12) The fuel additive system according to Claim 11 further comprising at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising from about 0.0004 to about 6 volume percent.
- 13) The fuel additive system according to Claim 11 further comprising at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising from about 6 to about 8 volume percent.
- 14) The fuel additive system according to Claim 11 further comprising:
  - a) at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising from about 0.0004 to about 6 volume percent; and
  - b) at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising from about 6 to about 8 volume percent.
- 15) The fuel additive system according to Claim 11 wherein:

- a) said at least one amount of said at least one additive component sufficient to effectively enhance biocidal action comprises about 4 volume percent 1,2,4-trimethylbenzene;
- b) said at least one amount of said at least one additive component sufficient to effectively enhance combustion boosting action comprises about 3 volume percent cumene;
- c) said at least one amount of said at least one additive component sufficient to effectively enhance water managing action comprises about 3 volume percent 2-butoxyethanol;
- d) said at least one amount of said at least one additive component sufficient to effectively enhance detergent action comprises about 20 volume percent DMA 558™ and about 6 volume percent 2,4-pentanedione;
- e) said at least one amount of said at least one additive component sufficient to effectively enhance solvent action comprises about 50 volume percent xylene and about 2 volume percent n-propylbenzene;
- f) said at least one amount of said at least one additive component sufficient to effectively enhance fuel stabilizing action comprises about 2 volume percent AO 22™; and
- g) said at least one amount of said at least one additive component sufficient to effectively enhance corrosion inhibiting action and said at least one amount of said at least one additive component sufficient to effectively enhance fuel lubricating action together comprises about 4 volume percent DCI 6A™.

- 16) The fuel additive system according to Claim 15 further comprising at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising about 2 volume percent ferrocene.
- 17) The fuel additive system according to Claim 15 further comprising at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising about 6 volume percent methanol.
- 18) The fuel additive system according to Claim 15 further comprising:
  - a) at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising about 2 volume percent ferrocene;  
and
  - b) at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising from about 6 volume percent methanol.
- 19) The fuel additive system according to Claim 1, for comprehensive-single-addition improvement of low-quality diesel fuels, comprising:
  - a) at least one amount of at least one additive component sufficient to effectively enhance biocidal action;
  - b) at least one amount of at least one additive component sufficient to effectively enhance combustion boosting action;
  - c) at least one amount of at least one additive component sufficient to effectively enhance corrosion-inhibiting action;
  - d) at least one amount of at least one additive component sufficient to effectively enhance water managing action;
  - e) at least one amount of at least one additive component sufficient to effectively enhance detergent action;

- f) at least one amount of at least one additive component sufficient to effectively enhance solvent action;
  - g) at least one amount of at least one additive component sufficient to effectively enhance fuel stabilizing action; and
  - h) at least one amount of at least one additive component sufficient to effectively enhance fuel lubricating action;
  - i) wherein at least one comprehensive fuel additive may be provided for adding to diesel fuels.
- 20) The fuel additive system according to Claim 19 further comprising at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action.
- 21) The fuel additive system according to Claim 19 further comprising at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action.
- 22) The fuel additive system according to Claim 19 further comprising:
- a) at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action; and
  - b) at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action.
- 23) The fuel additive system according to Claim 19 wherein:
- a) said at least one amount of said at least one additive component sufficient to effectively enhance biocidal action comprises from about 0.1 to about 2 volume percent;

- b) said at least one amount of said at least one additive component sufficient to effectively enhance combustion boosting action comprises from about 31 to about 65 volume percent;
- c) said at least one amount of said at least one additive component sufficient to effectively enhance corrosion inhibiting action comprises from about 0.25 to about 1 volume percent;
- d) said at least one amount of said at least one additive component sufficient to effectively enhance water managing action comprises from about 5 to about 15 volume percent;
- e) said at least one amount of said at least one additive component sufficient to effectively enhance detergent action comprises from about 10 to about 30 volume percent;
- f) said at least one amount of said at least one additive component sufficient to effectively enhance solvent action comprises from about 22 to about 60 volume percent;
- g) said at least one amount of said at least one additive component sufficient to effectively enhance fuel stabilizing action comprises from about 5 to about 10 volume percent; and
- h) wherein said at least one amount of said at least one additive component sufficient to effectively enhance fuel lubricating action comprises from about 1.2 to about 2.5 volume percent.

- 24) The fuel additive system according to Claim 23 further comprising at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising from about 0.0002 to about 9 volume percent.

- 25) The fuel additive system according to Claim 23 further comprising at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising from about 2 to about 45 volume percent.
- 26) The fuel additive system according to Claim 23 further comprising:
  - a) at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising from about 0.0002 to about 9 volume percent; and
  - b) at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising from about 2 to about 45 volume percent.
- 27) The fuel additive system according to Claim 23 wherein:
  - a) said at least one amount of said at least one additive component sufficient to effectively enhance biocidal action comprises from about 0.5 to about 1 volume percent;
  - b) said at least one amount of said at least one additive component sufficient to effectively enhance combustion boosting action comprises from about 31 to about 43 volume percent;
  - c) said at least one amount of said at least one additive component sufficient to effectively enhance corrosion inhibiting action comprises from about 0.5 to about 0.75 volume percent;
  - d) said at least one amount of said at least one additive component sufficient to effectively enhance water managing action comprises from about 5 to about 10 volume percent;

- e) said at least one amount of said at least one additive component sufficient to effectively enhance detergent action comprises from about 10 to about 20 volume percent;
  - f) said at least one amount of said at least one additive component sufficient to effectively enhance solvent action comprises from about 22 to about 45 volume percent;
  - g) said at least one amount of said at least one additive component sufficient to effectively enhance fuel stabilizing action comprises from about 5 to about 7 volume percent; and
  - h) wherein said at least one amount of said at least one additive component sufficient to effectively enhance fuel lubricating action comprises from about 1.5 to about 2 volume percent.
- 28) The fuel additive system according to Claim 27 further comprising at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising from about 0.0004 to about 6 volume percent.
- 29) The fuel additive system according to Claim 27 further comprising at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising from about 5 to about 31 volume percent.
- 30) The fuel additive system according to Claim 27 further comprising:
- a) at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising from about 0.0004 to about 6 volume percent; and
  - b) at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising from about 5 to about 31 volume percent.



31) The fuel additive system according to Claim 27 wherein:

- a) said at least one amount of said at least one additive component sufficient to effectively enhance biocidal action comprises about 1 volume percent T9312™;
- b) said at least one amount of said at least one additive component sufficient to effectively enhance combustion boosting action comprises about 30 volume percent 2-ethylhexyl nitrate and also comprises about 2 volume percent 2-ethylhexyl alcohol;
- c) said at least one amount of said at least one additive component sufficient to effectively enhance corrosion inhibiting action comprises about 0.5 volume percent DCI 6A™;
- d) said at least one amount of said at least one additive component sufficient to effectively enhance water managing action and said at least one amount of said at least one additive component sufficient to effectively enhance detergent action together comprise about 10 volume percent DMA 451™;
- e) said at least one amount of said at least one additive component sufficient to effectively enhance solvent action comprises about 20 volume percent AROL 50™ and also comprises about 2.5 volume percent heavy aromatic naptha;
- f) said at least one amount of said at least one additive component sufficient to effectively enhance fuel stabilizing action comprises about 5 volume percent DMA 558™; and
- g) wherein said at least one amount of said at least one additive component sufficient to effectively enhance fuel lubricating action comprises about 2 volume percent OLI 5015™.

- 32) The fuel additive system according to Claim 31 further comprising at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising about 2 volume percent ferrocene.
- 33) The fuel additive system according to Claim 31 further comprising at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising about 20 volume percent vinyl acetate polymers.
- 34) The fuel additive system according to Claim 31 further comprising:
  - a) at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action comprising about 2 volume percent ferrocene;  
and
  - b) at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action comprising about 20 volume percent vinyl acetate polymers.
- 35) The fuel additive system according to Claim 7, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component sufficient to effectively enhance combustion boosting action comprises at least one additive component selected from the group consisting essentially of:
  - a) methyl tert-butyl ether
  - b) ethyl tert-butyl ether
  - c) tert-amyl methyl ether
  - d) diisopropyl ether
  - e) tert-amyl alcohol
  - f) tert-butyl alcohol
  - g) methanol

- h) ethanol
- i) isopropanol
- j) n-propylbenzene
- k) toluene
- l) xylene
- m) benzene
- n) nitromethane
- o) nitroethane
- p) propylene oxide
- q) naphtha and
- r) cumene.

36) The fuel additive system according to Claim 7, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component sufficient to effectively enhance corrosion inhibiting action comprises at least one additive component selected from the group consisting essentially of:

- a) DCI series products
- b) DCI 6A™
- c) DCI 4A™
- d) DCI 11™
- e) DCI 28™
- f) DCI 30™
- g) HITEC 580™
- h) BIOBOR JF™
- i) ONDEO-NALCO 5403™.

- 37) The fuel additive system according to Claim 7, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component sufficient to effectively enhance water managing action comprises at least one additive component selected from the group consisting essentially of:
- a) 2-butoxyethanol
  - b) methanol
  - c) ethanol
  - d) isopropyl alcohol
  - e) alcohols
  - f) ethers
  - g) water scavengers
  - h) DMA 451™.
- 38) The fuel additive system according to Claim 7, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component sufficient to effectively enhance detergent action comprises at least one additive component selected from the group consisting essentially of:
- a) DMA 558™
  - b) DMA series products
  - c) amines
  - d) polyisobutyleneamine
  - e) polyalkyl amines
  - f) polyether amines
  - g) polyalkyl succinimides
  - h) polyalkylaminophenols

- i) a sulfonate
  - j) a phosphonate
  - k) a thiophosphonate
  - l) a phenate
  - m) a salicylate
  - n) 2,4-pentanedione and
  - o) 2,3-pentanedione.
- 39) The fuel additive system according to Claim 7, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component sufficient to effectively enhance solvent action comprises at least one additive component selected from the group consisting essentially of:
- a) xylene
  - b) toluene
  - c) benzene
  - d) naptha
  - e) cumene and
  - f) n-propylbenzene.
- 40) The fuel additive system according to Claim 7, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component sufficient to effectively enhance fuel stabilizing action comprises at least one additive component selected from the group consisting essentially of:
- a) AO 22™
  - b) AO series products
  - c) alkylated phenols

- d) diamines
- e) surfactants
- f) dispersants
- g) 2,4-pentanedione
- h) 2,3-pentanedione and
- i) amines.

41) The fuel additive system according to Claim 7, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component sufficient to effectively enhance biocide action comprises at least one additive component selected from the group consisting essentially of:

- a) 1,2,4-trimethylbenzene
- b) thiazoles
- c) thiocyanates
- d) isothiazolins
- e) cyanobutane
- f) dithiocarbamates
- g) thiones
- h) bromo-compounds
- i) surfactants
- j) water-scavengers
- k) ONDEO-NALCO 303MC™ and
- l) BIOBOR JF™.

42) The fuel additive system according to Claim 7, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component

sufficient to effectively enhance fuel lubricating action comprises at least one additive component selected from the group consisting essentially of:

- a) DCI 6A™
- b) DCI™ series products
- c) AO™ series products
- d) oils
- e) polyalphaolefins
- f) sulfur
- g) ONDEO-NALCO 5403 and
- h) lubricants.

- 43) The fuel additive system according to Claim 8, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component sufficient to effectively enhance combustion modifying action comprises at least one additive component selected from the group consisting essentially of:

- a) ferrocene
- b) platinum
- c) cerium
- d) manganese
- e) methyleclopentadienyl manganese tricarbonyl and

f) HITEC 3023™.

- 44) The fuel additive system according to Claim 9, for comprehensive-single-addition improvement of low-quality motor fuels, wherein said at least one additive component sufficient to effectively enhance low temperature flowing action comprises at least one additive component selected from the group consisting essentially of:

- a) methanol
  - b) n-propanol
  - c) isopropanol
  - d) polyalkyl methacrylate
  - e) polystyrene methacrylate
  - f) polymethacrylates
  - g) dispersants
  - h) wax modifiers and
  - i) 2-butoxyethanol.
- 45) The fuel additive system according to Claim 19, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance combustion boosting action comprises at least one additive component selected from the group consisting essentially of:
- a) 2-ethylhexyl nitrate
  - b) 2-ethylhexyl alcohol
  - c) cumene
  - d) n-propylbenzene
  - e) toluene
  - f) xylene
  - g) benzene
  - h) nitromethane
  - i) nitroethane
  - j) propylene oxide
  - k) ethanol



- l) octyl nitrate
- m) naptha
- n) methyl tert-butyl ether
- o) ethyl tert-butyl ether
- p) tert-amyl methyl ether
- q) diisopropyl ether
- r) tert-amyl alcohol
- s) tert-butyl alcohol
- t) methanol and
- u) isopropyl alcohol.

46) The fuel additive system according to Claim 19, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance corrosion inhibiting action comprises at least one additive component selected from the group consisting essentially of:

- a) DCI 4A™
- b) DCI 6A™
- c) DCI 11™
- d) DCI 28™
- e) DCI 30™
- f) HI TEC 580™
- g) BIOBOR JF™
- h) ONDEO-NALCO 5403™
- i) azoles
- j) amines

- k) nitrites
- l) phosphates
- m) molybdates
- n) phosphonates and
- o) silicates.

47) The fuel additive system according to Claim 19, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance water managing action comprises at least one additive component selected from the group consisting essentially of:

- a) DMA 451™
- b) DDA-4500™
- c) HITEC 6471™
- d) HITEC 6423™
- e) ALKEN EVEN FLO 910™
- f) Alcohols
- g) 2-butoxyethanol
- h) water scavengers.

48) The fuel additive system according to Claim 19, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance detergent action comprises at least one additive component selected from the group consisting essentially of:

- a) DMA 451™
- b) DMA series products
- c) DMA 558™

- d) DMA 559™
- e) DMA 560™
- f) DMA 561™
- g) DMA 562™
- h) DMA 563™
- i) DMA 564™
- j) amines
- k) polyisobutyleneamine
- l) polyalkyl amines
- m) polyether amines
- n) polyalkyl succinimides
- o) polyalkylaminophenols
- p) sulfonates
- q) phosphonates
- r) thiophosphonates
- s) phenates
- t) salicylates
- u) 2,4-pentanedione and
- v) 2,3-pentanedione.

49) The fuel additive system according to Claim 19, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance solvent action comprises at least one additive component selected from the group consisting essentially of:

- a) AROL 50™

- b) HISOL 100
- c) benzene
- d) xylene
- e) toluene
- f) cumene
- g) naptha
- h) heavy aromatic naptha and
- i) n-propylbenzene.

50) The fuel additive system according to Claim 19, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance fuel stabilizing action comprises at least one additive component selected from the group consisting essentially of:

- a) DMA 558™
- b) DMA™ series products
- c) 2,3-pentanedione
- d) 2,4-pentanedione
- e) amines
- f) dispersants and
- g) surfactants.

51) The fuel additive system according to Claim 19, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance biocide action comprises at least one additive component selected from the group consisting essentially of:

- a) T9312™

- b) T9360™
- c) 1,2,4-trimethylbenzene
- d) KATHON 886™
- e) BIOBOR JF™
- f) ONDEO-NALCO 303MC™
- g) thiazoles
- h) thiocyanates
- i) isothiazolins
- j) cyanobutane
- k) dithiocarbamates
- l) thiones
- m) bromo-compounds
- n) surfactants and
- o) water-scavengers.

52) The fuel additive system according to Claim 19, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance fuel lubricating action comprises at least one additive component selected from the group consisting essentially of:

- a) OLI 5015™
- b) All AO™ series products
- c) All DCI™ series products
- d) All OLI-5000™ series products
- e) All OLI-9000™ series products
- f) ONDEO-NALCO 5403™

- g) HITEC 580™
  - h) oils
  - i) polyalphaolefins and
  - j) sulfur.
- 53) The fuel additive system according to Claim 20, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance combustion modifying action comprises at least one additive component selected from the group consisting essentially of:
- a) ferrocene
  - b) platinum
  - c) cerium
  - d) manganese
  - e) methylcyclopentadienyl manganese tricarbonyl
  - f) HITEC 3023™
  - g) ALKEN EVEN FLO 910™ and
  - h) nitromethane.
- 54) The fuel additive system according to Claim 21, for comprehensive-single-addition improvement of low-quality diesel fuels, wherein said at least one additive component sufficient to effectively enhance low temperature flowing action comprises at least one additive component selected from the group consisting essentially of:
- 
- a) methanol
  - b) n-propanol
  - c) 2-butoxyethanol
  - d) isopropanol

- e) polyalkyl methacrylate
- f) polystyrene methacrylate
- g) polymethacrylates
- h) dispersants
- i) wax modifiers and
- j) vinyl acetate polymers.

55) A method of making a fuel additive system, for comprehensive-single-addition improvement of low-quality transportation fuels, comprising the step of mixing the following ingredients:

- a) at least one amount of at least one additive component sufficient to effectively enhance biocidal action;
- b) at least one amount of at least one additive component sufficient to effectively enhance combustion boosting action;
- c) at least one amount of at least one additive component sufficient to effectively enhance corrosion inhibiting action;
- d) at least one amount of at least one additive component sufficient to effectively enhance water managing action;
- e) at least one amount of at least one additive component sufficient to effectively enhance detergent action;
- f) at least one amount of at least one additive component sufficient to effectively enhance solvent action;
- g) at least one amount of at least one additive component sufficient to effectively enhance fuel stabilizing action; and
- h) at least one amount of at least one additive component sufficient to effectively enhance fuel lubricating action;

- i) wherein at least one comprehensive fuel additive may be provided for adding to transportation fuels.
- 56) The method of making a fuel additive system according to Claim 55 wherein said step further comprises mixing in at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action.
- 57) The method of making a fuel additive system according to Claim 55 wherein said step further comprises mixing in at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action.
- 58) The fuel additive system according to Claim 55 wherein said step further comprises mixing in:
  - a) at least one amount of at least one additive component sufficient to effectively enhance combustion modifying action; and
  - b) at least one amount of at least one additive component sufficient to effectively enhance low temperature flowing action.
- 59) The fuel additive system according to Claim 55 further comprising the step of mixing in low-quality transportation fuels.
- 60) The fuel additive system according to Claim 59 wherein said at least one amounts of said at least one additive components totally comprise a volume ratio with respect to said low-quality transportation fuels of about 1:1000.

61-70) (withdrawn)



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**XI. EVIDENCE APPENDIX**

DECLARATION OF EDWARD R. EATON

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Todd et al.

Serial No.: 10/665,955

Filed: 09/17/2003

For: Fuel Additive Systems

Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

)  
) Group Art Unit: 1714  
) Examiner: Toomer, Cephia D.  
) Attorney Docket No: P03927  
)  
)

I, Edward R. Eaton, do hereby declare that:

1. I have over twenty-four years of experience in the field of automotive fluids, particularly coolants and fuel additives; and my colleagues consider me an expert in such fields. A list of my professional experience, including my areas of study, is included below in Appendix A. A list of my publications is included below in Appendix B.
2. I have thoroughly reviewed the published patent application of Thomas A. Todd, serial no. 10/665,955, titled "Fuel Additive Systems", publication no. 2004/0060229, including its specification and its Claims.
3. Based on my experience and expertise, it is my opinion that all the products referred to by trademarks in such Claims are not indefinite descriptions of the underlying products merely because they are referred to by brand name/trademark/tradename based on the following personally-verified facts:
  - a. Additives, such as those listed in the Claims, are registered with the United States Environmental Protection Agency (EPA), and possibly with foreign governmental agencies. The petroleum industry does not change the chemistry of a product, once commercialized and branded, because this would severely impact the industry and governmental certifications to which the product has been certified.
  - b. The combination of legal registrations and technical testing qualifications that permit the use of a given product for a given purpose are so extensive as to require that a new product be certified where there is any change in the chemistry of a fuel additive.
  - c. Further, no supplier has changed the chemistry of a fuel additive without also changing the brand, as doing so would create serious liability.
  - d. As an example, it is the nature of petroleum industry additive suppliers to: (1) protect their product's specific chemical composition; and (2) permanently brand their products with a product name or part number. The chemical compositions of petroleum industry products are typically protected by trade secret. As an example only, one widely used additive from the Lubrizol Corporation is Lubrizol 539. Lubrizol 539 has been around for decades and is a well-known proprietary product that

has never changed composition. If, and when, an improvement to a product is developed, the improved product will receive a new designation, such as a new brand, for example, Lubrizol 540.

- e. As an illustration of how consistent such additives must be, I once had an additive company contact me when they could not fill an order for a given product. Although the chemistry was compliant with the product we ordered, the batch had darkened in color. This in no way affected the product's performance, but even this trivial variance required that the product receive a unique designation and we had to cancel our order for the lighter color product, and re-order the available, darker color version.
4. In line with my above comments, the scopes of the Claims, in this case, are not uncertain. The "trademarks" and "tradenames", as used in the reviewed application, do properly identify a particular material/product.
5. Thus it is my opinion that the trademarks referred to in the instant application are definite because their use *does* particularly point out and distinctly identify the subject matter of the Claims.
6. Appendix A follows:

January, 2000 – Present Amalgamated Laboratories Phoenix, AZ  
Chief Engineer, President, Chief Operating Officer

- Oversee ASTM standard analytical and performance testing of engine coolants.
- Consult with antifreeze and coolant recycling companies regarding technical challenges.
- Advise chemical, engine and vehicle manufacturers on coolant, fuel and fuel additive chemistry.

1994–2000 The Penray Companies, Inc. Wheeling, IL  
Director, Technical Services

- Technical representation to engine and vehicle manufacturers.
- Research and development of coolant and fuel technologies.
- Development of competitive product information for marketing and sales personnel.
- Investigation and resolution of problem situations.
- Published one peer-reviewed technical paper relating to diesel fuel technology and eight relating to coolant technology.

1989–1994 Stanadyne Automotive Corp. Windsor, CT  
National Aftermarket Sales Manager

- Invented reverse osmosis coolant recycling technology, granted U.S. and foreign patents; published technical paper.
- Formulated and promoted the sales of advanced diesel fuel additives, pioneered aftermarket fuel lubricity technologies.
- Oversaw sales & marketing of all aftermarket products and provided technical support, worldwide.

1987–1989 FPPF Chemical, Inc. Buffalo, NY  
Manager, Special Projects

- Assisted in the development and marketing of filtration-based coolant recycling technology.

1976-1987 Intermountain Farmers, Inc. Salt Lake City, UT  
Division Manager

- Oversaw automotive division including the operations of 27 stores.
- Served on national brand advisory council for automotive products.

1976-1978 University of Utah Salt Lake City, UT

- Chemical Engineering
- Minor studies in Accounting and Business Management

1974-1976 Bucknell University Lewisburg, PA

- Chemical Engineering
- Pre-medical curriculum

7. Appendix B follows:

"An Investigation of the Effects of Low Sulfur Diesel Fuel on Winter Engine Operation and Recommended Changes in Wintertime Fuel Management Practices", SAE Technical Paper Series #952367, Society of Automotive Engineers, Warrendale, PA, 1995. (co-author: David Daniels, Basic Fuel Services)

"Observations of the Reliability Effects of Operating Heavy Duty Diesel Engines with a Nitrite/Borate/Low Silicate Coolant with no Coolant Change Interval", SAE Technical Paper Series #960642, Society of Automotive Engineers, Warrendale, PA, 1996. (co-author: R. P. Carr, The Penray Companies, Inc.)

"Development of an Ultra-Low Silicate, Phosphate-Free, Extended- Service Interval Coolant, Supplemental Coolant Additive and Maintenance Practice for Use in High Output Off-Highway and Powerplant Internal Combustion Iron Block Engines", SAE Technical Paper Series #961819, Society of Automotive Engineers, Warrendale, PA, 1996. (co-author Samuel Alexander, Detroit Diesel Corp.)

"Engine Reliability Experience of Mixed Vehicle Fleets Operating on Engine Coolant Recycled with Reverse Osmosis Technology", SAE Technical Paper Series #962239, Society of Automotive Engineers, Warrendale, PA 1996

"Recycling Used Engine Coolant Using High-Volume Multiple Technology Equipment" *Engine Coolant Testing, Fourth Volume, ASTM STP 1335*, R. E. Beal, Ed., American Society for Testing and Materials, West Conshohocken, PA, 1997. (co-author M. E. Haddock, Recycled Engine Coolant, Inc.)

"Extended Service of 'Fully Formulated' Heavy Duty Antifreeze in American Cars", *Engine Coolant Testing, Fourth Volume, ASTM STP 1335*, R. E. Beal, Ed., American Society for Testing and

Materials, West Conshohocken, PA, 1997. (co-author M. E. Haddock, Recycled Engine Coolant, Inc.)

"Development of Mobile, On-Site Engine Coolant Recycling Utilizing Reverse Osmosis Technology", *Engine Coolant Testing, Fourth Volume, ASTM STP 1335*, R. E. Beal, Ed., American Society for Testing and Materials, West Conshohocken, PA, 1997. (co-author W. Kughn, Toxguard, Inc.)

"Modern Reverse Osmosis Recycling of Used Engine Coolant", SAE Technical Paper Series #971773, Society of Automotive Engineers, Warrendale, PA, 1997

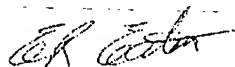
"An Assessment of the Validity of Conductivity as an Estimate of Total Dissolved Solids in Heavy Duty Coolants". *Engine Coolant Testing, Fourth Volume, ASTM STP 1335*, R. E. Beal, Ed., American Society for Testing and Materials, West Conshohocken, PA, 1997. (co-author R. P. Carr, The Penray Companies, Inc.)

"Fleet Test Evaluation of Fully-Formulated Heavy-Duty Coolant Technology Maintained with a Delayed-Release Filter Compared with Coolant Inhibited with an Organic Acid Technology" *Engine Coolant Testing, Fourth Volume, ASTM STP 1335*, R. E. Beal, Ed., American Society for Testing and Materials, West Conshohocken, PA, 1997.

"Standard Test Method for Cavitation and Erosion-Corrosion Characteristics of Aluminum Pumps with Engine Coolants", SAE Technical Paper Series #2001-01-1181, Society of Automotive Engineers, Warrendale, PA, 2001. (co-author: Mary Ranger, Ford Motor Corp.)

"A Chemical Base for Engine Coolant / Antifreeze with Improved Thermal Stability Properties". SAE Technical Paper Series #2001-01-1182, Society of Automotive Engineers, Warrendale, PA, 2001.

8. I further declare under penalty of perjury pursuant to the law of the United States of America that the foregoing (consisting of a total of 4 pages, including this page) is true and correct, and that this declaration was executed by me on this 15<sup>th</sup> day of September, 2006.



Edward R. Eaton

**XII. RELATED PROCEEDINGS APPENDIX**

None.